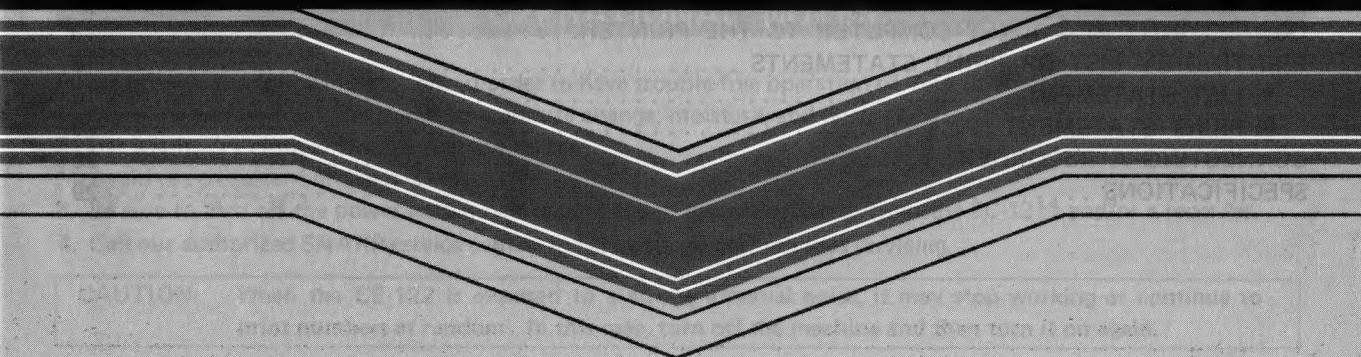


# SHARP

PRINTER/CASSETTE INTERFACE

MODEL **CE-122**

INSTRUCTION MANUAL



# TABLE OF CONTENTS

	PAGE
INTRODUCTION .....	1
OPERATIONAL NOTES .....	1
POWER .....	2
KEYBOARD .....	5
OPERATING CONTROLS .....	6
PAPER TAPE REPLACEMENT .....	9
CARTRIDGE RIBBON REPLACEMENT .....	11
CONNECTING THE POCKET COMPUTER TO THE PRINTER .....	13
PRINTING BY LIST OR PRINT STATEMENTS .....	16
1. LIST STATEMENT .....	16
2. PRINT STATEMENT .....	20
CONNECTING A RECORDER .....	28
SPECIFICATIONS .....	29

## INTRODUCTION

Congratulation on your purchase of this SHARP printer/cassette interface model CE-122.

A 16-digit dot matrix printer is used as the optional printer and will print out the program contents by the LIST statement or the data specified by the PRINT statement.

In the printer is provided the conversion circuit by which digital signal is converted into recording signal, and vice versa, for recording or reproducing data from the magnetic recording tape.

In addition, it has a tape recorder remote control switch, with which the tape recorder is started and stopped by the computer, or controlled manually.

## OPERATIONAL NOTES

Please observe the following cautions in order to have trouble-free operation of your SHARP printer.

1. Store the printer free of extreme temperature change, moisture, and dust.
2. Use a soft, dry cloth when cleaning the printer.  
Avoid use of solvent or a wet cloth.
3. Be sure to turn off the power switch before connecting/disconnecting to/from the PC-1211 and/or a recorder.
4. Call our authorized SHARP service center, in case your printer requires servicing.

**CAUTION:** When the CE-122 is exposed to a strong external noise, it may stop working or continue to print numbers at random. In this case, turn off the machine and then turn it on again.

### **Cautions for strong static electricity and external noise**

- ① If the pocket computer receives strong static electricity and external noise, the display sometimes changes, keys do not operate, etc. In such cases, push the all reset switch and input the data and program into the memory again.
- ② In such cases, if you have previously recorded a program and data on tape recorder magnetic tape, it can be used again.

### **NOTICE**

Your CE-122 is driven by a rechargeable Ni-Cd battery source. In order to have an optimum of performance, please read this instructions carefully prior to initial operation of the printer after unpacking.

It will be necessary to recharge battery if the printer is to be operated for the first time upon unpacking or left unused for a period of three months or more.

To recharge the battery, simply connect the AC adaptor (EA-11E only) via the wall outlet with the printer power switch being off. (See the diagram on Page 3 of the instruction manual).

It will take about 15 hours before the battery is fully charged.

## **POWER**

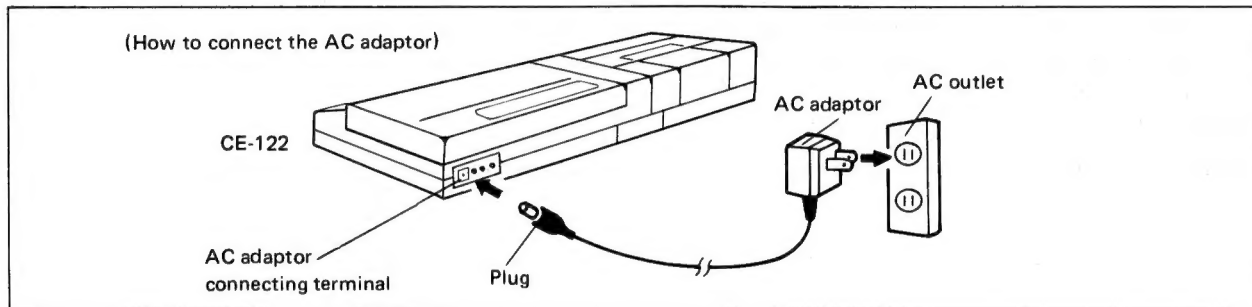
The CE-122 is driven by the Ni-Cd battery.

The low battery indicator will come blinking when it requires recharging.

## RECHARGING

Ensure before recharging the battery that the printer switch is off, because recharging is done only when the printer power is off. Then, connect to the wall outlet via the AC adaptor.

- An exhausted battery will recover its full potential when recharged for a period of about 15 hours.



### Note:

- In case no printing and paper feeding actions are possible even if the low battery indicator is off, it calls for battery recharge because the indicator fails to blink when the battery power drops too low.
- Before operating the unit immediately after unpacking or it left unused for three months or more, it is essential to recharge the battery. To recharge the battery, connect the unit to the wall outlet via the AC adaptor, with the printer power switch being off. The battery power is exhausted after a certain time due to natural discharge. Note that the printer will not perform proper function unless the battery potential is recovered to a certain level.

- Never try to use any other kind of AC adaptor except the EA-11E.

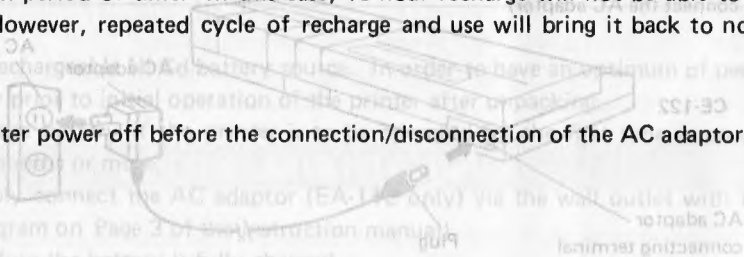
## WARNING

Using the AC adaptor other than EA-11E may results in damage to the unit owing to improper supply rating.

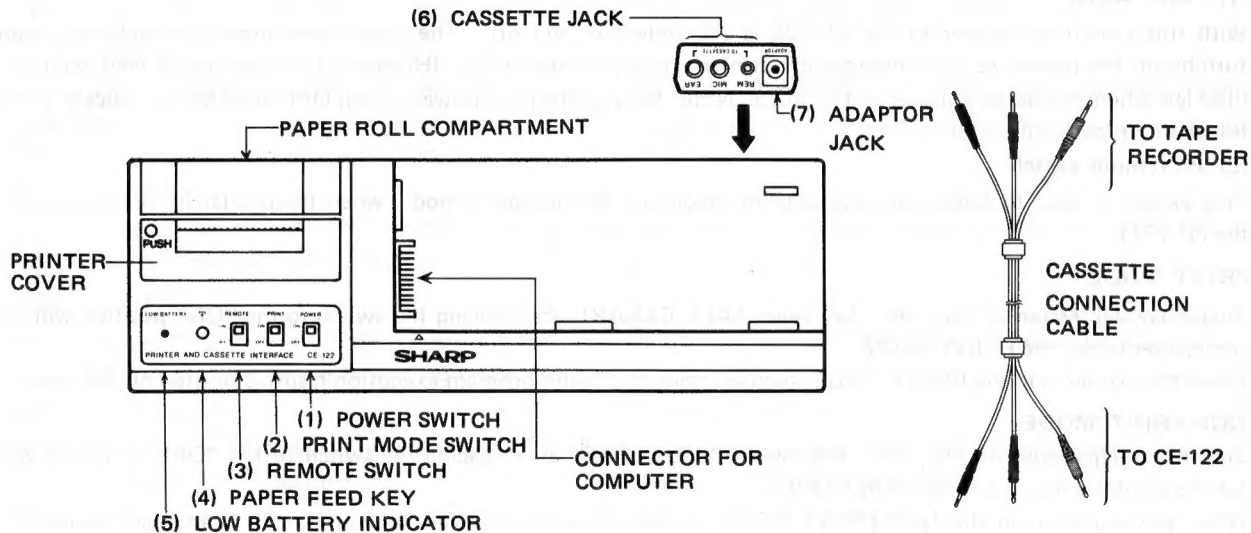
- The battery capacity may have been deteriorated due to excessive discharge in the battery when the printer is left unused for a certain period of time. In this case, 15-hour recharge will not be able to recover sufficient charge in the battery. However, repeated cycle of recharge and use will bring it back to normal 15-hour full charge achievement.

## NOTE:

It is essential to turn the printer power off before the connection/disconnection of the AC adaptor.



# KEYBOARD



# OPERATING CONTROLS

## (1) Power switch

With this switch the power to the CE-122 is controlled on and off. The paper is advanced automatically upon turning on the power, so as to indicate the printer is ready for operation. (However, the initial paper feed would be disabled when the battery power is too low.) Note: Do not turn the power switch OFF and ON too quickly (with less than 1 second intervals).

## (2) Print mode switch

This switch is used to select the normal print mode and the non-print mode, when the printer is connected with the PC-1211.

## PRINT MODE

Successive depression of the **ON** key twice (ALL CLEAR) after placing the switch to the "ON" position will set the printer under the PRINT MODE.

When the printer is in the PRINT MODE, such as program list and program execution result is printed on the paper.

## NON-PRINT MODE

Successive depression of the **ON** key twice (ALL CLEAR) after placing the switch to the "OFF" position will set the printer under the NON-PRINT MODE.

When the printer is in the NON-PRINT MODE, printer action is disabled so that the PC-1211 may be used independently.

**NOTE:**

Be sure to depress the **ON** key of the PC-1211 twice after changing the PRINT MODE key position, in order to change the printer mode (PRINT and NON-PRINT), because it sets the PC-1211 ready for printer assignment. Note that above procedure is effective even when the POWER switch of the CE-122 is at the "OFF" position.

**(3) Remote switch**

This switch functions to control tape recorder engagement when the REMOTE plug of the cassette connection cable is connected to the REMOTE jack of the CE-122. With the power ON, change-over of the remote switch becomes effective after paper feed take place automatically.

**REMOTE ON**

When the switch is kept at "ON" position, the tape recorder is kept under the remote condition so that start and stop of the tape recorder is controlled by the PC-1211 itself.

**REMOTE OFF**

When the switch is kept at "OFF" position, the tape recorder is kept off the remote condition so that rewind, fast forward of the tape can be controlled manually.

**NOTE:**

When this switch is changed in the midst of tape recorder or printer operation, the resultant change will take place upon the completion of the operation.

**(4) Paper feed key**

The paper roll will be advanced as long as the key is depressed.

### (5) Low battery indicator

Normally, this indicator is out when battery power is sufficient. However, it will start blinking when the battery power drops too low to operate the printer.

When the indicator starts to blink, data recording and fetching to/from the cassette recorder and the printer is disabled, and commands from the computer are skipped over, that is, ignored.

When the power switch of the CE-122 is turned on after making a sufficient recharge of the battery with the power switch at "OFF" position, the indicator will stop to blink, allowing to accept print command, data recording and fetching commands to the tape.

#### NOTE:

The low battery indicator may fail to blink when the battery potential is too low below the specific level.

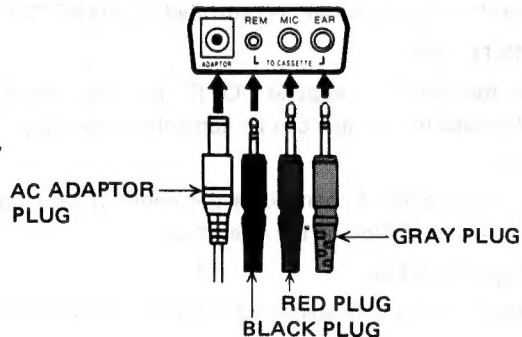
### (6) Cassette jacks

Cassette connection cable plugs are connection to these jacks.

### (7) Adaptor jack

The plug of the AC adaptor (EA-11E) is connected to this jack, when the battery is recharged.

Note: The silver-gray button provided at the bottom of this unit is intended to reduce the influence of static electricity generated on the printer. Therefore, the button has nothing to do with the general operation of this unit.



## PAPER TAPE REPLACEMENT

- (1) Turn the CE-122 off.
- (2) Open the paper cover. (Fig. 1)
- (3) Insert the leading edge of the roll of paper into the opening in the paper tape compartment. (Fig. 2) (Fig. 3)

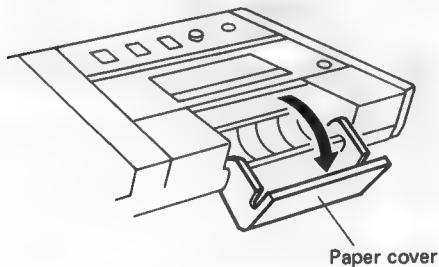


Fig. 1

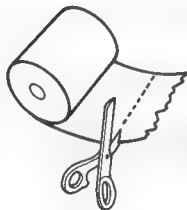


Fig. 2

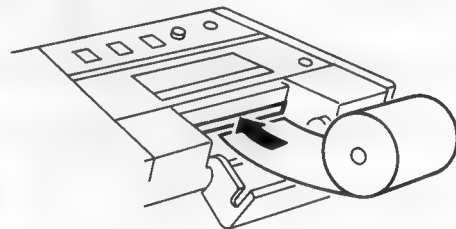


Fig. 3

**NOTE:** Use of deformed paper tape may cause irregular paper feeding or paper jamming. Therefore, be sure to tighten the roll before using as shown in the figure.

Paper tape roll

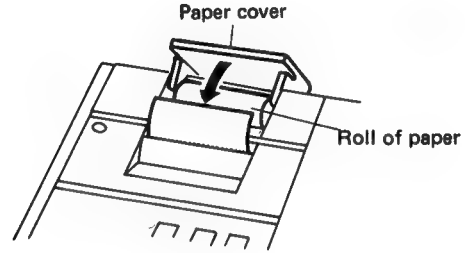
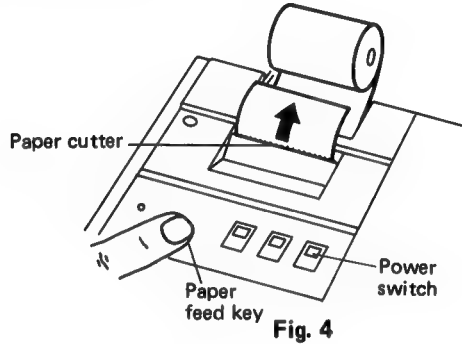


Wrong



Right

- (4) Turn on the CE-122 and press the paper feed key until the paper comes out of the print mechanism. (Fig. 4)
- (5) Install the roll of paper into the compartment.
- (6) Close the paper cover. (Fig. 5)



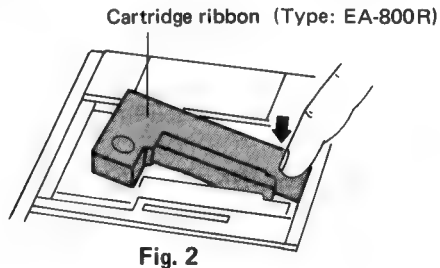
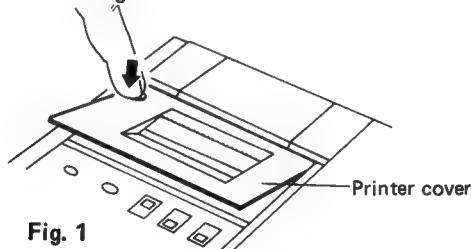
- As the printer is equipped with a paper release mechanism, cut the paper roll on the paper roll compartment side, then pull the paper out straight to the paper cutter side to remove the paper from the printer.

## CARTRIDGE RIBBON REPLACEMENT

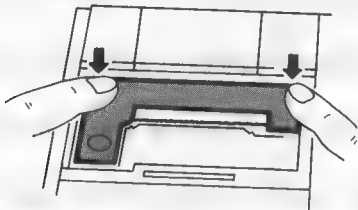
A cartridge is used for the ink ribbon of this printer. **Replace the cartridge ribbon specifically designed for the CE-122 (Type: EA-800R) in the following manner, when print impression became too weak.**

(Sometimes, print impression may become weak due to dried ink ribbon when it was left unused for a longer time.)  
(In such an event, advance the ink ribbon to a certain degree to a properly inked portion after feeding the paper.)

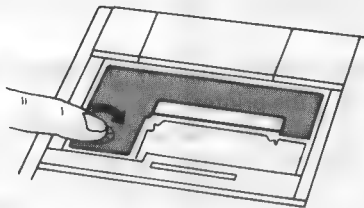
- (1) Turn CE-122 off.
- (2) Open the paper tape cover, cut away the paper tape, and then pull the remaining part of the paper forward and completely out of the printer.
- (3) Push in the left side corners (marked "PUSH") of the printer cover with fingers to remove the printer cover from the printer. (See Fig. 1) Remove the printer cover.
- (4) Next, push in the corners marked "PUSH" of the cartridge ribbon to remove it from the printer (See Fig. 2). Remove the cartridge ribbon.



- (5) Install the new cartridge ribbon as shown in Fig. 3. Make sure that the cartridge ribbon is securely in place.
  - (6) Turn the knob clockwise as shown in Fig. 4 to stretch the ribbon.
  - (7) Replace the printer cover.
  - (8) Replace the paper tape.
- (Refer to PAPER TAPE REPLACEMENT)



**Fig. 3**



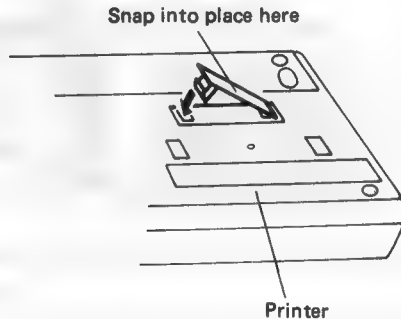
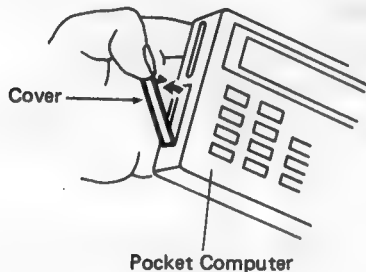
**Fig. 4**

**Note:** When you clean the paper cutter, remove the printer cover. Then clean the paper cutter portion using a soft and dry cloth. Do not use solvent or a wet cloth.

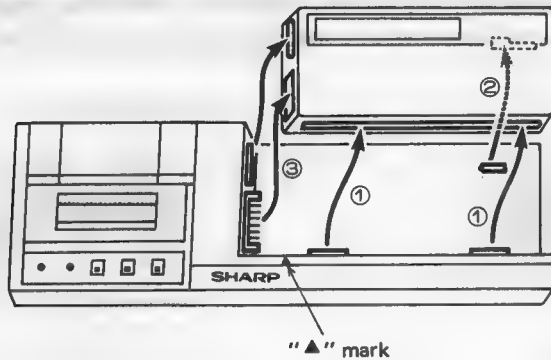
**CAUTION:** APPLYING INK TO WORN CARTRIDGE RIBBON MAY CAUSE SERIOUS DAMAGE TO PRINTER.

## CONNECTING THE POCKET COMPUTER TO THE PRINTER

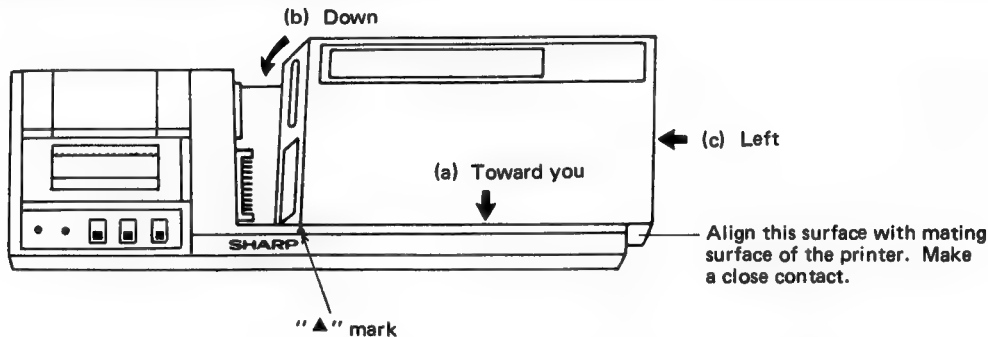
1. Turn off your Pocket Computer by pressing **OFF** key and your Printer by pushing the power switch.
2. Remove the cover from the left side of your Computer, and snap it into place on the bottom of the Printer.



3. Engage latches on the Printer with notches on the Computer, as shown below.



4. Slide the Pocket Computer carefully to fit securely onto the Printer. (Set the Computer so that its left end will come to the triangular mark ( ▲ ) of the Printer.)



5. Avoid using too much force even if they do not fit properly. Carefully shift Computer to the left and the right to make sure that all mating surfaces are correctly positioned.

**NOTE:** It is essential to turn off the power on the Computer and the Printer, before connecting or disconnecting the Computer from the Printer. If power is ON, all keys may stay inoperative. In this case, press the ALL RESET switch on the bottom of the Computer, which will function to clear the condition.

## PRINTING BY LIST AND PRINT STATEMENTS

When the printer is connected with the computer, it will print out the program contents on the paper with the LIST statement or the specific data contents with the PRINT statement.

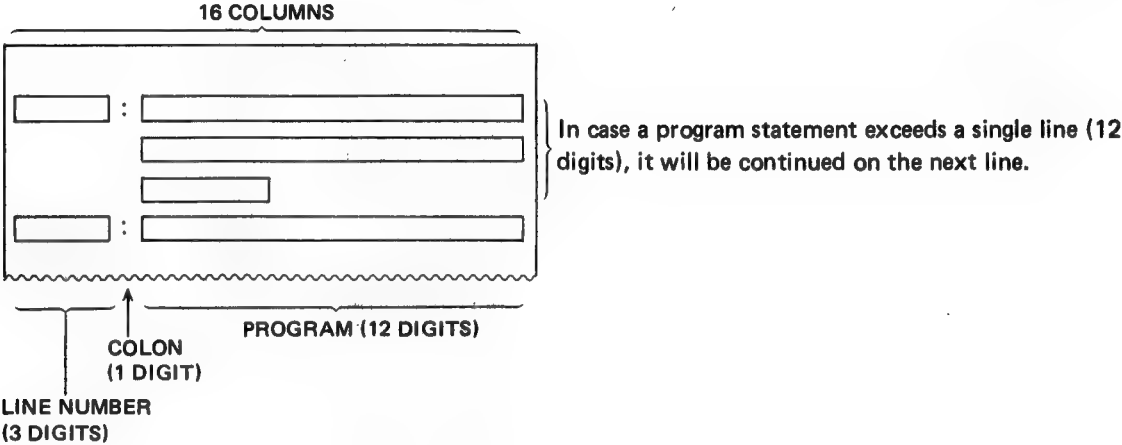
### 1. LIST statement

- When "LIST" is entered and then **ENTER** is pressed, it will print out an entire program contents on the paper. Upon the completion of the printout, the display will exhibit the prompt sing (>) on the display of the Computer.

#### < Operation >

- (1) Turn on the CE-122 by pushing the power switch.
- (2) Set the printer in the PRINT mode by depressing the **ON** key twice after placing the PRINT MODE switch to "ON" position. (Remember to press the **ON** key twice.)
- (3) Set the Computer in the PRO mode using the **MODE** key.
- (4) Enter LIST and push **ENTER** .

With this, the program is printed out according to the format given below:



## < Example of program list >

### (1) Phythagorean theorem

```
10: INPUT A, B
20: C=√(A*A+B*B)
30: PRINT C
40: END
```

### (2) Quadratic equation

```
10: "A": INPUT "A"
   ="! A, "B="! B,
   "C="! C
20: B=-B/2/A
30: D=B*B-C/A
40: IF D=0 GOTO 100
50: IF D>0 GOTO 120
60: Y=√(-D)
70: PRINT "***REAL"
   L**", B
80: PRINT "IMAGINARY", Y
90: END
100: PRINT "EQUAL"
    ", B
110: END
120: PRINT "REAL"
    , B+√D
130: PRINT "REAL"
    , B-√D
140: END
```

(Refer to title "QUADRATIC EQUATION" (Program No. P4-A-8) of applications manual)

- In case program listing is to be interrupted in the midst of operation, keep the **[ON]** key depressed until printing action stops.  
If it is to be discontinued immediately, turn off the power switch of the CE-122.
- When a line number is specified like "LIST 10 **[ENTER]**", the program of the specific line number is displayed but not printed, in the same manner as in the case Computer is used independently.

Example Pythagora's theorem

[Programming]

- (1) Turn on the PC-1211 by pressing the **[ON]** key.
- (2) Press **[MODE]** key to display "PRO".  
(i.e. program mode)
- (3) Press the following keys.

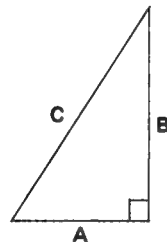
**[N] [E] [W] [ENTER]**

10 **[I] [N] [P] [U] [T] [A] [SHIFT] [,] [B] [ENTER]**



20 **[C] [=] [√] [(] [A] [\*] [A] [+] [B] [\*] [B] [)] [ENTER]**

30 **[P] [R] [I] [N] [T] [C] [ENTER]**

40 **[E] [N] [D] [ENTER]**



## [Printing]

- (1)  ↑
- (2)  ↑, Press **ON** keys twice on the computer.
- (3) Press **MODE** key to display the symbol "PRO". (When the symbol "PRO" is displayed, ignore this step and proceed to the next step.)
- (4) Press **L** **I** **S** **T** **ENTER** .

## 2. PRINT statement

When Computer is used independently, appearance of a PRINT statement causes to halt program execution as a display command and shows the specific statement on the display. However, if the CE-122 is connected to the Computer and is under the PRINT mode, the PRINT statement causes to print the specific contents on the paper as a printer output command, and continues program execution. (No **ENTER** key is required to continue the execution of the program.)

PRINT statement may be specified in the same format as in display command.

- (i) General form (1) ~ (3)

PRINT (a)

Where, (a) may be either < expression >, "character", or [character variable].  
And, (b) may be either [variable] or "character".

- (ii) General form (4)

PRINT (a), (a)

(iii) General form (5)

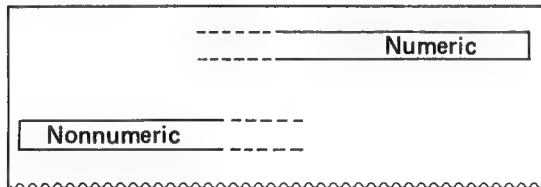
PRINT (a) ; (b) ; (b) ; ....

- For General form, refer to the paragraph discussion "PRINT statement" in the instruction manual.

(i) PRINT

Example: PRINT A  
PRINT A \* B  
PRINT B\$  
PRINT "ABCDE"

When printing is executed in one of above formats, numeric will be right justified to the right margin of the printing position when printed out. If it is nonnumeric item (such as character), it will be printed from the left margin of the printing position.



< Printing example >

Nonnumeric

PRINT "ABCDE"

PRINT B\$

ABCDE  
PROGRAM

Numeric

PRINT A

PRINT A \* B

-1.234567898E-02  
-123.  
123.456789

- If the specified characters were to exceed 16 digits, a carrier return is automatically performed to continue printing. (See example below).

PRINT "ABC ..... XYZ"

ABCDEFGHIJKLMNOP  
QRSTUVWXYZ

Example 1. "PRINT C" in Pytagora's theorem  $A = 3, B = 4, C = ?$

(The Pythagorean theorem as described above is regarded to be programmed in the Computer.)

(1) Press **MODE** to display the symbol "RUN".

(2) Press **R** **U** **N** **ENTER** .

**3** **ENTER** **4** **ENTER** .

The answer "5" will be printed at the right hand side of the paper.

Example 2. Program 10: INPUT A\$

20: PRINT 5 \* 6

30: PRINT "PROGRAM A"

40: PRINT A\$

50: PRINT "ABCDEFGHIJKLMNOPQRSTUVWXYZ"

(1) Set PRO mode

NEW **ENTER**

10 INPUT A **SHIFT** **\$** **ENTER**

20 PRINT 5 **\*** 6 **ENTER**

30 PRINT **SHIFT** **||** PROGRAM **SPC** A **SHIFT** **||** **ENTER**

40 PRINT A **SHIFT** **\$** **ENTER**

50 PRINT **SHIFT** **||** ABCDEFGHIJKLMNOPQRSTUVWXYZ **SHIFT** **||** **ENTER**

(2) Set the RUN mode

Press RUN **ENTER**

Press WORLD **ENTER**

(3)

```
30.  
PROGRAM A  
WORLD  
ABCDEFGHIJKLMN  
OP  
QRSTUVWXYZ
```

< Paper feed > Space ( **SPC** )

PRINT " **□** " Where " **□** " represent a space.

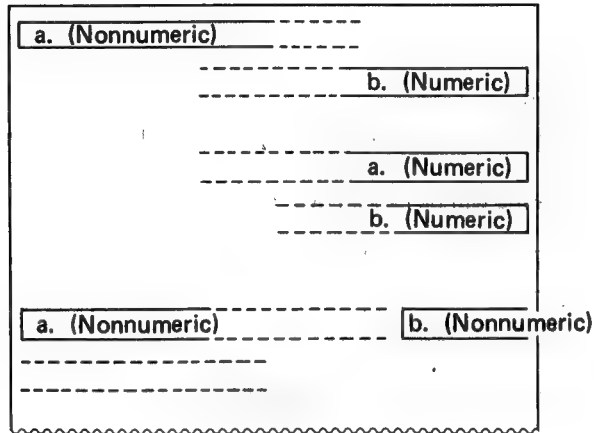
When the above statement is met, it will carry out a single line feed. In case several lines are to be fed, the above statement must be repeated as many times as required through separate line numbers.

(ii) PRINT **□**, **□** Ex. PRINT A, B  
PRINT A \* B, A + B  
PRINT "DATA", A

When printing is executed in one of above formats, the contents to the left of a comma is printed first, then the contents to the right of the comma is printed after a carrier return.

In this case, numeric is printed right justified and nonnumeric is printed left justified, as in the case of (1).

If both contents separated by a comma were to consists of nonnumeric and character variable, the contents on the left side is printed on the left side 12 digits of the paper roll and leading four digits of the right side contents is printed on the same line, and the rest of 8 digits will be printed to the left of the next line after making a carrier return.



PRINT a , b

PRINT A, B

```

123456.789
-1.23456E-12
  
```

PRINT "DATA", A

```

DATA
DATA      123.
          1.23456789
  
```

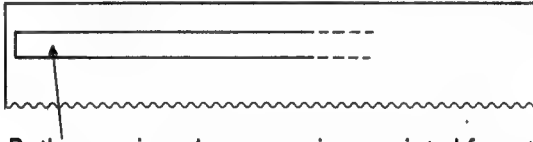
(iii) **PRINT** ; ; ....

Ex: **PRINT A; B; C**

**PRINT "X="; A; "Y="; B; "Z="; C**

When printing is executed in one of above formats, the data will be printed out from the left margin, regardless of numeric or nonnumeric.

If the data were to exceed 16 digits, printing will be carried over to a succeeding line.



Both numeric and nonnumeric are printed from the left margin.

< **Printing example** >

**PRINT "X="; A; "Y="; B; "Z="; C**

X=-3. Y=-4. Z=5.  
X=3. Y=4. Z=-5.

## < Exceptions >

Under a certain condition, the printing may not be carried out in compliance with the printing formats discussed previously, as discussed below.

### Example—1

PRINT ".....123."

Space  
Contents that can be assumed as numeric. (General form (2))  
24 digits

123.

When 24 digits are assigned for nonnumeric with leading character positions are all spaces and that character positions after that are assumed as numeric, it is not possible to discriminate "PRINT 123" from "PRINT A" of which "A = 123", so that it will be printed out in the same format as in General form (1).

### Example—2

PRINT A; B

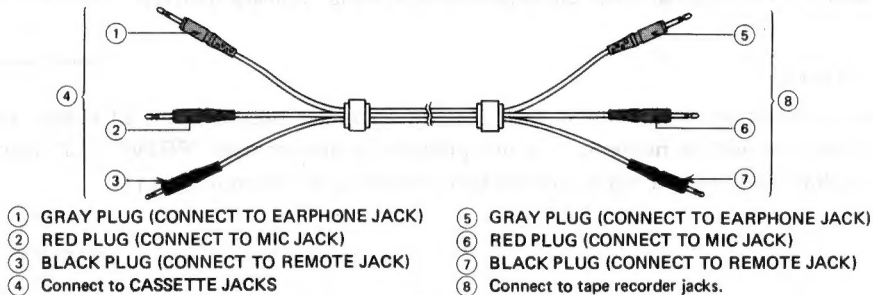
Where, A = -123456789.1 (12 digits), and  
B = -234567890.1 (12 digits).

-123456789.1  
-234567890.1

In case A and B are 12 digits, respectively, and that B is of a negative value, discrimination can not be done from "PRINT A, B" (General form (4)), so that it will be printed out in the same format as in General form (4).

## CONNECTING A RECORDER

Tape recorder can be connected to the CE-122 using the cassette connection cable which is included in accessories. Connect plugs on one side of cable to CASSETTE JACKS and plugs on the other side to jacks on the tape recorder.



For the connection of tape recorder, the operation of the tape recorder and data recording/transferring procedure of the tape, refer to the Computer Instruction Manual.

### REMOTE SWITCH:

Since the CE-122 is equipped with the REMOTE on/off switch, keep the REMOTE switch to "ON" position when the tape recorder is to be remotely controlled. And, keep it at "OFF" position when the tape is to be handled by manual operation. This will enable to manipulate the tape without pulling out the black plug from the REMOTE jack of the tape recorder.

## SPECIFICATIONS

Type:	Printer with cassette interface
Printer:	Mechanical dot printer
Printing capacity:	16 digits
Printing speed:	Approx. 1 line/sec.
Paper feed speed:	Approx. 1 line/sec.
Printing paper:	45 mm (1-25/32") wide, 25 mm (31/32") in outer diameter (max.)
Power source:	Built-in rechargeable Ni-Cd battery
Operation:	Approx. 8,000 lines (Charging time: Approx. 15 hours with AC adaptor EA-11E)
Power consumption:	4.8V $\pm$ (DC): 1.84W
Operating temperature:	0°C ~ 40°C (32°F ~ 104°F)
Dimensions:	282(W) x 95(D) x 35(H) mm 11-3/32"(W) x 3-3/4"(D) x 1-3/8"(H)
Weight:	410 g (0.90 lbs.)
Accessories:	Roll of paper x 3, Cartridge ribbon x 1 (Built-in), AC adaptor EA-11E, Carrying case, and Cassette connection cable.

# SHARP CORPORATION

## OSAKA, JAPAN

Printed in Japan

1D2.8T(TINSE3199CCZZ)